

- 2 -

In Claim 19, Line 1, after "Claims 1, 2" delete ", 4";

In Claim 19, Line 2, after "spot" delete "and" and insert --or--;

In Claim 20, Line 1, after "Claims 1, 2" delete ", 4";

In Claim 20, Line 2, after "water" delete "and" and insert --or--;

Claim 22 is cancelled.

REMARKS

The Claims have been amended in response to the Section 112 objections.

The Examiner has rejected Claim 21 as being anticipated by White et al. The Examiner states that White discloses a liquid immersion scan lens comprising a scan lens 20 for use with an object 22, the scan lens having an external entrance pupil (top of 25) for focusing light on the object in a prescribed object plane 23. The Examiner further states that the scan lens has an immersion liquid filling a space between the scan lens and the object (Figure 1).

Applicant has reviewed White in some detail and respectfully disagrees with the interpretation of the Examiner. It is respectfully submitted that there is no scan lens described in White. White describes an objective lens 20 for a scanning laser microscope. There is no indication in White that the objective lens 20 has an external entrance pupil and it is respectfully submitted that the objective lens 20, in fact, does not have an external entrance pupil. Further, the present application describes the term scan lens as a lens that is normally used for focusing a parallel beam of light to a small spot that scans across the focal plane. The incoming parallel beam is directed by a scanner placed at the position of the entrance pupil of the scan lens. Such lens has a combination of wide angular field, a flat image plane, and an external entrance pupil. The objective lens 20 described in White does not have any of these features and, in particular, does not have an external entrance pupil. It could not be used in the present invention as it would not work and would not operate as a scan lens. Further, there is no indication in White that an immersion liquid fills the space between the objective lens 20 and the specimen 22. Further, even if the objective lens 20 was used with an immersion liquid filling the space between the objective lens 20 and the specimen 22, the objective lens 20 would still not be a liquid immersion scan lens as the objective lens 20 is not a scan lens as described in the present application. It is therefore respectfully submitted that the objection based on anticipation by White be withdrawn.

The Examiner has rejected Claims 1, 2, 7/1, 7/2/1, 8/1, 8/2, 9/1, 9/2/1, 10/1, 10/2/1, 11/1, 11/2/1, 14-17, 19/1, 19/2/1, 19/14/1, 20/1, 20/2/1 and 20/14/1 as being unpatentable over Dixon

- 3 -

in view of Stimson et al. the Examiner states that Stimson et al discloses a scan lens 326, being a liquid immersion scan lens with an immersion liquid (oil) filling a space between said scan lens and said object (Column 6, Line 45+). It is respectfully submitted that Stimson does not use a scan lens at all and describes lens 326 as being a microscope objective (Column 6, beginning at Line 44). Further, the microscope objective 326 in Stimson does not have an external entrance pupil and requires a unitary telescope between the static mirror 328 and the last scan mirror 306. It is respectfully submitted that combining Dixon and Stimson would provide an instrument that would not work because Stimson requires the unitary telescope with the scanning mirror 306 and static mirror 328. Further, there is a major difference between the microscope described in Stimson and the macroscope of the present application. The macroscope of the present application has ten times the field of view of a microscope. It is respectfully submitted that prior to the present application, no liquid immersion laser scan lens existed and Stimson certainly does not disclose a liquid immersion scan lens. It is therefore respectfully submitted that the objection to the Claims based on Dixon in view of Stimson et al should be withdrawn.

The Examiner has rejected Claims 1, 12 and 23 as being unpatentable over Dixon in view of White. Applicant repeats the remarks made with respect to Stimson above. As stated above, White does not disclose a liquid immersion scan lens with an immersion liquid filling a space between the scan lens and an object. Further, White does not disclose a scan lens, but an objective lens 20. White further does not state that the objective lens 20 has an external entrance pupil, and, in fact, the objective lens 20 of White does not have an external entrance pupil. Therefore, it is respectfully submitted that it is not obvious to combine the teachings of White and Dixon and, even if it were obvious to combine the teachings of White and Dixon, one would not achieve the results of the present invention. It is therefore respectfully submitted that the objections to Claims 2, 12 and 23 be withdrawn.

As stated in the present application on Page 9, beginning at Line 22, it is stated that if no immersion fluid 208 were used, in order to achieve the same focal spot size at the specimen, the light travelling through the specimen would have to follow a wider cone shown by the dashed lines of Figure 2 and the focal length of the scan lens in air would have to be reduced as well as having to increase the diameter of the lens. The use of an immersion fluid has increased the numerical aperture of the lens and thus has increased the resolution achievable with a scanning imaging system as well as increasing the laser energy density at the focal spot volume. As stated in the Description of the Prior Art on Page 3, Line 20 of the present application, it is stated that

- 4 -

the optical resolution of a prior art microscope can be increased by increasing the numerical aperture of the laser scan lens, but with a decreased field of view. With the present application, it has been discovered that the numerical aperture of the scan lens can be increased by using immersion fluid resulting in an increase in the resolution achievable. In other words, the use of a liquid immersion scan lens has produced a surprising and unexpected result. The combination of the teachings of Dixon and Stimson or the combination of the teachings of Dixon and White do not render the present invention unpatentable.

The Examiner has rejected Claims 13/1 and 13/2/1 as being unpatentable over Dixon in view of Stimson and further in view of Guerra. For the reasons set out above, with respect to the combination of Dixon and Stimson, it is respectfully submitted that Dixon and Stimson do not disclose all of the limitations of Claims 1 and 2 and therefore, cannot render Claim 13 obvious when combined with Guerra. Figure 13 of Guerra shows a means for facilitating proximity of a transducer to a sample. Gas, such as air under pressure is contained within a sealed housing 90 attached to which is a framed transducer 10. Guerra does not disclose a scan lens or a liquid immersion scan lens. While Guerra does show an immersion medium 32, the combination of Guerra, Dixon and Stimson do not render Claims 1, 2 or 13/1 or 13/2/1 obvious and the objection should therefore be withdrawn. Prior to the present application, no one had created a liquid immersion scan lens.

The Examiner has rejected Claims 18/1, 18/2/1 and 18/14/1 as being unpatentable over Dixon in view of Stimson and further in view of Trapp. For the reasons stated above with respect to the combination of Dixon and Stimson, Applicant takes issue with the Examiner's statement that Dixon and Stimson teach or suggest all of the limitations of Claims 1, 2 and 14. Stimson does not disclose a scan lens for the reasons provided above and does not disclose a liquid immersion scan lens. While Trapp does show a spring mounted in a tubular housing, Stimson does not show the use of a scan lens or a liquid immersion scan lens and none of Trapp, Dixon or Stimson, taken separately or together, disclose a spring mounted scan lens. It is therefore respectfully submitted that the objection to Claim 18 should be withdrawn.

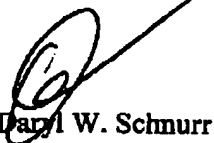
The Examiner has provisionally objected to a number of Claims on the basis of double patenting between the present application and Application No. 10/648,450. It is respectfully submitted that Applicant cannot respond fully to this provisional objection until such time as the scope of allowable subject matter in the two applications is determined. However, Applicant states that Application Serial No. 10/648,450 does not claim or describe a liquid immersion scan

- 5 -

lens and that the Claims of the two applications are sufficiently distinct that there would be no double patenting.

We are enclosing a copy of the Claims of the present application as amended.

Yours very truly,



Daryl W. Schmurr
Reg. No. 28,569